

PAPILIO CALELI, Reakirt.

Pap. alcamedes, Felder, Zool. d. Novara Exp., p. 36, n. 26, t. vii., f. c. (1865).

Hab.—Guatemala. (Coll. Tryon Reakirt.)

Mexico. (Coll. Entom. Soc.)

New Granada? (Coll. Felder.)

A species of considerable range, and presenting slight modifications throughout, which, however, are not local or confined to particular sections. These are well expressed by Dr. Felder, l. c., p. 27, and may be briefly stated thus.—In the varying size of the white or yellowish white spot between the two last median veinlets of the fore wings, and also in the width of the subtriangular green band; in the presence of one or two greenish streaks of different lengths within the cell above the white spot, and in the longer or shorter red spots upon the hind wings.

PAPILIO TONILA, Reakirt.

Pap. aristomenes, Felder, Zool. d. Novara Exp., p. 38, n. 27, t. viii., f. a. (1865).

Hab.—Guatemala. (Coll. Tryon Reakirt.)

Mexico. (Coll. Entom. Soc. and Felder.)

The only difference between Dr. Felder's excellent figure, and the specimens in my possession, and the cabinet of the Society is, that his *aristomenes* has a white dash above the subcostal vein of the primaries—absent in all which I have seen. I do not doubt but that they are identical. I do not believe that *tonila* is the ♀ of *caleli*, as indicated by Dr. Felder in his *Species Lepidopterorum*, p. 296, n. 107 (1864); it is more nearly related to the ♀ of *mylotes*, Gray, than *caleli* is to the ♂ of that species.

Pap. caleli and *tonila* belong to a group of nearly allied forms of peculiar facies, all inhabiting the northern parts of South, or the tropical portions of North America; their co-members are *mylotes*, Gray, *timias*, Dbldy., and *eurimedes*, Cram.; the last, possessed of the greatest range, is most probably the parent stock of the other and segregated species.

PAPILIO GUNDLACHIANUS, Felder.

Pap. Gundlach., Feld. Verh. d. Zool. bot. Gesellsch. in Wien, p. 294, n. 75 (1864).

Pap. Columbus, Gundl. Herr. Sch. Corr. Bl. Zool. Min. Vereins, xvi., p. 141 (1862).

Not *Pap. Columbus*, Hewits. Trans. Ent. Soc. Lond., n. ser., i., p. 98 (1851.)

Pap. Grotei, Blake, Proc. Ent. Soc. Phil., iv., p. 313 (1865.)

Description of the Hot Springs of Soda Creek, their location, number, temperature and altitude, and the Geological features of the surrounding locality; together with the remarkable discovery of a human skeleton and a fossil Pine Tree in the Boulder and Gravel formation of Soda Bar, Oct. 13th, 1860.

BY E. L. BERTHOUD, C. E.

Soda Creek is in Long: 105° 40'. Lat. 39° 35'. Approx. altitude above the sea 6570 feet.

Time of observation 10 A. M., Oct. 13th, 1860. Wind W. S. W. Sky cloudless. Therm. in air 57° F. Temperature of Soda Creek 45° F.

1st.	Spring temperature of water	98°	F.
2d.	"	"	99° "
3d.	"	"	55° "
4th.	"	"	54° "
5th.	"	"	55° "
6th.	"	"	91° "
7th.	"	"	90° "

[Nov.]

There are numerous other cold and warm springs that issue from the surface in every direction, but not deep or large enough to give a fair average temperature. The water of these springs deposits on the surrounding ground and stones a saline efflorescence of a pure white, and with a soda or saline taste. Several of the hot springs are continually depositing a tufa, which has formed around them all dome-shaped hillocks, with basin-like cavities in the centre, from which the water, mingled with a constant rush of bubbles of gas, boils up like a seething caldron. The waters have an acid taste not unpleasant, with decidedly chalybeate qualities, which approximate it very much to the famed Congress Springs of Saratoga, N. Y. Iron is deposited by several of the springs, giving a reddish tinge to the tufa. The springs are situated from three to thirty feet above the level of Soda Creek, a clear cold mountain stream, with gravelly bed; for a long distance below the springs, the gravel in the bar and bed of Soda Creek are cemented by the tufa deposited by the hot springs. It has evidently been always a place of resort for the mountain sheep (*Ovis montana*), mountain goat (*Capra Amer.*) and buffalo (*Bison Amer.*) who delight to lick the incrustations and drink the waters of these springs. This is shown by their numerous bones found above and under ground near the springs. Indeed, as late as July 3d, 1860, three mountain sheep were killed near these springs. In the springs, both hot and cold, conferva and a few grasses grow; no fish, however, are found in them; no crustacea except perhaps one about $1\frac{1}{2}$ inches long, which is found in the hot springs, and which has a hard covering and rudimentary legs. This insect, crustacean, or whatever it may be, is very much of the color, size and shape of the kind found in Great Salt Lake, by Captain Fremont, in 1843—44.

The flora of the neighboring region to these springs is rather scanty, and comprises the following more common species:

<i>Juniperus communis.</i>	<i>Sesleria dactyloides.</i>
<i>Juniperus virginianus.</i>	<i>Bromus</i> , sp. undet.
<i>Pinus variabilis.</i>	<i>Poa</i> , " "
<i>Pinus fraseri.</i>	<i>Elymus hystrix.</i>
<i>Salix tristis.</i>	<i>Helianthus</i> , sp. undet.
<i>Populus angulata.</i>	<i>Aster</i> , 2 sp. undet.
<i>Populus tremuloides.</i>	<i>Cynoglossum</i> , sp. undet.
<i>Alnus incana.</i>	<i>Euchroma coccinea.</i>
<i>Cornus sericea.</i>	<i>Cactus opuntia.</i>
<i>Solidago secunda?</i>	<i>Astragalus</i> , 3 sp.
<i>Stanleyi integrifolia.</i>	<i>Baptisia</i> , 1 sp. undet.
<i>Camelina</i> , 1 sp.	<i>Sisymbrium</i> , 1 sp.
<i>Draba</i> , 2 sp.	<i>Barbarea</i> , 1 sp.
<i>Calochortus luteus.</i>	<i>Fragaria virginiana.</i>
<i>Sorbus</i> , sp. undet.	<i>Rubus spectabilis.</i>
<i>Spiraea</i> , " "	" <i>idaeus.</i>
<i>Rosa</i> , " "	<i>Ribes floridum.</i>
<i>Vaccinium</i> , sp. undet.	<i>Ribes</i> , 2 sp. undet.

What, however, renders the locality of the Hot Soda Springs still more remarkable, aside from their singular character, and the picturesque scenery of their surrounding location, is the following fact recently developed:

About the last days of September, 1860, two miners, who had been for two months and a half opening a mining claim about 200 yards S. W. of the springs and at the foot of the hill marked on the map Soda Hill, reached at last in the gravel, boulders and rocky deposits of Soda Bar, a depth of 22 feet; here at this depth and about 3 yards from the foot of the hill slope, they found a human skeleton, lying on its face and imbedded in a deposit of gravel, sand, small boulders, and fragments of the adjacent rock *in situ*, which from 2 feet below the surface in this locality yields a very fine rich quality of coarse gold. The skeleton, all whose larger bones, though very light and porous, were yet intact, and whose skull was also entire, was in a very tolerable state of preservation; 1866.]

under the skeleton and about 2 feet lower down, they found upon the surface of what the miners call "red rock," the trunk, limbs and roots of a small pine tree, identical in all respects with the red pine (*P. variabilis*) of the adjacent slopes; the bark appeared charred and blackened, the wood was light, yellow and apparently sound, showing the fibrous woody structure, the knots, the annual rings of growth, identical with *variabilis*: on exposure to air, however, it soon became soft and crumbled, more like rotten, or water soaked wood. The roots and limbs appeared as if violently compressed or forced in the seams of the underlying rock. There, then, was a point conclusively shown, namely, that prior to the cause which covered Soda Hill, Soda Bar and Dry Diggings Hill with its enormous beds of gravel, sand and boulders, and its native gold, (which is everywhere sought for in this locality, from the lowest points of Payne's and Illinois Bars, 2½ feet above Clear Creek up to the highest points where it can availablely be mined and hauled to water) man roved and dwelt in this region, timber grew, and everything requisite to furnish food to mankind and the brute creation must have flourished in proximity. Here then we have, within the period of man, evidence that either the convulsions which caused the emergence of the Rocky Mountain range in Western Kansas is a very late geological phenomenon, or that some sudden cause, the upheaval perhaps of the higher Central range, through the metamorphic granite, the talc and mica slates of the lower Eastern ranges of the Rocky Mountains, scooped out the low interior mountain basin in which the Gregory, Russell, Nevada, Lake and other gulches now mined and populated are located; and that then, as the floods, be they of mud, water, or snow and ice, caused by the disturbed equilibrium of the older chain of mountains, by the sudden emptying of Mountain Lakes perhaps, or by the sudden melting of snows and deluges of rain, then subsided, and the vast fissures through which Clear Creek now finds its way into the Platte gave way to the pent up waters; then perhaps the receding waters, still carrying a vast amount of detritus as the waters subsided, left them in their present location. Indeed, one is at once surprised at the location of the so-called Pike's Peak Gold Mines of Gregory and Clear Creek.

After looking over a lofty mountain road for 16 miles, we descend from 1000 to 2000 feet into an interior mountain basin, surrounded on all sides by mountain ranges of much greater altitude, and through which but one avenue has been opened, where Clear Creek or Vasquez Fork of Platte river finds its way into the vast prairies extending from the foot of the mountains to the Missouri river. Perhaps it may be urged that glacial phenomena may account for this anomalous fact. In answer we can say that, from the evidence before us, the climactic condition of the present time, carried out by the identity of the long buried flora of the period when this convulsion took place with the one now in existence, forbid us from supposing that the Central range (or Snowy range, more commonly so-called,) was ever the seat of Glaciers large or extensive enough to cause phenomena at all adequate to explain the changes and erosions now so plainly seen in the valley of Vasquez Fork, or in the upper mining region. The lofty summits of Long's and Pike's Peaks, the intermediate lofty chain, the high mountains between Clear Creek and Bear Creek, although they retain in places deposits of snow and small beds of ice, yet nothing is ever found upon them answering the appearance of constant glaciers, whose accretion in cold summers and diminution in warm summers write upon the bare mountain peaks a history of their force and continued action. As a proof of the recent date of the convulsions that have in ages past furrowed and torn up the Plutonic rocks of the east side of the range, that have upheared the tertiary strata at the foot of the mountains, until their almost perpendicular strata form a secondary valley parallel with the valley of the South Platte and has spread over the vast plains of the Platte and Kansas Rivers, the boulders, gravel and sand formed of Feldspathic granite, it is interesting and valuable, and may be a guide, a clew to the solution of the question by which the valley of the Platte, the interior prairie of South Park, the complete want, over a vast ex-

[Nov.

tent of country, of timber and vegetable soil may be accounted for, by the draining and disappearance of vast bodies of fresh water; whatever cataclysm buried this member of the human family, be he Aztec, Indian, Esquimaux or Mound builder, he is for the region above mentioned, "homo diluvii testis." We confess that our preconceived notions of the antiquity of this globe have received a severe shock by this discovery, and have modified our views of the relative antiquity of the strata of this globe and the age of this part of the continent; with a wish that some more able pen will help to elucidate this strange point, we present these few facts.

A list of minerals found in the Rocky Mountain Mining Region, between Long. 105° and 106°. Lat. 40° and 39° N.

Native iron.	Magnetic iron ore.	Quartz crystals.
" copper.	Bog " ore.	Milky quartz.
" gold.	Specular " ore.	Vitreous quartz.
" silver.	Tourmaline.	Smoky quartz.
" alum.	Garnet.	Argentiferous galena.
Sulphuret of iron.	Wavellite.	Kaolin.
" lead.	Stilbite.	Laumonite?
" copper	Arragonite.	Brown coal.
" zinc.	Carb. of lime.	Graphite.
Auriferous pyrites.	Mica.	Manganese.
Arsenical pyrites.	Talc.	Selenite.
Blue copper ore.	Feldspar.	Gypsum.
Green copper ore.	Albite.	Alabaster.

December 4th.

The President, DR. HAYS, in the Chair.

Thirty-seven members present.

Dr. Leidy made some remarks upon a collection of fossil bones, recently brought from the Mauvaisis Terres of White River, Nebraska, by Prof. Hayden. Among the fossils he exhibited the fragments of a jaw, upon which he characterized a new sabre-toothed tiger, under the name of *Drepanodon* or *Machairodus occidentalis*, a species larger than its cotemporary the *D. primævus*.

December 11th.

The President, DR. HAYS, in the Chair.

Fifty three members present.

The following were presented for publication: "List of Coleoptera collected in Lycoming Co." "List of Coleoptera collected near Fort Whipple." "Revision of the *Dasytini*," and "Additions to the Coleopterous Fauna of the United States, No. 1." By John L. LeConte, M. D.

"Descriptions of some new *Cicindelidæ* from the Pacific Coast," and "Descriptions of new Coleoptera of Central America." By Geo. H. Horn, M. D.

"On a new genus of Homoptera." By Henry Shiner.

The elections postponed from the last meeting for business were held with the following result:

Albert R. Leeds, A. R. Calhoun, Joseph C. Turnpenny, John Ford, Edwin J. Houston and W. S. Grant, were elected members.

1866.]